

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for producing single microlenses or an array of microlenses composed of a glass-type material, ~~in which method~~ the method comprising:

providing a first substrate ~~is provided~~ with a surface containing impressions over which a second substrate composed of a glass-type material is placed at least partially overlapping it and is joined therewith under vacuum conditions, and ~~in which~~ method

tempering the substrate composite ~~is tempered~~ in such a manner that the second substrate softens and flows into the impressions of the first substrate, thereby structuring the side of the second substrate facing away from the first substrate in order to form at least one microlens surface, wherein for forming the at least one microlens surface, the softened glass-type material of the second substrate flows into at least two impressions of the first substrate, the shape, size and arrangements of the two ~~impression~~ impressions determining the curvature of the forming microlens surface.

2. (Currently Amended) A method according to claim 1, wherein a first substrate is provided containing a first impression into which said softened glass-type material flows during the tempering process to form a concave surface contour at the

microlens surface opposite the first substrate and wherein provided beside the first impression and separated by an intermediate fillet is a second impression into which ~~a~~ an amount, which is determinable, of the softened glass-type material flows determined by the shape, size and arrangement of the second impression to form a prescribed curvature of the microlens surface in at least a subdomain of the concave surface contour.

3. (Currently Amended) A method according to claim 1, wherein ~~a~~ the first substrate ~~is provided which, containing~~ contains at least two impressions separated by an intermediate fillet area over which a convex surface contour forms at the microlens surface opposite the first substrate due to the lateral flowing off of the softened material into the at least two impressions during the tempering process.

4. (Currently Amended) A method for producing single microlenses or an array of microlenses composed of a glass-type material, ~~in which method~~ the method comprising:

providing a first substrate ~~is provided~~ with a surface containing impressions over which a second substrate composed of a glass-type material is placed at least partially overlapping it and is joined therewith, with a gaseous medium being enclosed in the impressions between the first and said second substrate and ~~in~~ ~~which method~~

tempering the substrate composite ~~is tempered~~ in such a manner that the second substrate softens and is displaced by the gaseous medium expanding in the

area of the impressions thereby structuring the side of the second substrate facing away from the first substrate to form at least one convex microlens surface, wherein a the first substrate is provided having a first impression which encloses with the second substrate a first cavity with the second substrate in which the gaseous medium is enclosed which expands during tempering and displaces the softened glass-type material to form a convex surface contour on ~~the~~ a microlens surface lying opposite the first substrate, and

wherein on the first substrate at least one second impression is provided separated by an intermediate fillet next to the first impression, the at least one second impression enclosing with the second substrate a second cavity in which the gaseous medium is enclosed which expands during tempering and displaces the softened glass-type material to form a curvature, which can be prescribed, of the microlens surface at least in a subdomain of the convex surface contour.

5. (Original) A method according to claim 4, wherein joining the second substrate with the first substrate occurs under normal or high pressure conditions.

6. (Currently Amended) A method according to ~~one of the claims 1 to 5~~ claim 5, wherein after tempering and cooling of the glass-type substrate, the second substrate is separated from the first substrate.

7. (Currently Amended) A method according to ~~one of the claims 1 to 6~~ claim 6, wherein separation of the second substrate from the first substrate occurs by ~~means~~ of etching away the first substrate.

8. (Currently Amended) A method according to ~~one of the claims 1 to 6~~ claim 6, wherein separation of the second substrate from the first substrate occurs by providing a separation layer between the first substrate and the second substrate, the separation layer being applied in the form of a sacrificial layer on the structured surface in a structure retaining manner before joining the two substrates, the sacrificial layer being destroyed by means of thermal and/or chemical action and permitting separation of the two substrates.

9. (Currently Amended) A method according to ~~one of the claims 1 to 8~~ claim 4, wherein a metal layer is placed between the first and the second substrate.

10. (Original) A method according to claim 9, wherein said metal layer is utilized as a separation layer which has a melting point below the melting points of the substrates.

11. (Currently Amended) A method according to ~~one of the claims 1 to 10~~ claim 4, wherein the structured surface of the first substrate is provided with impressions having structure widths B and the second substrate having a thickness D and wherein the following applies approximately:

$$B < 0.5*D$$

12. (Currently Amended) A method according to ~~one of the claims 1 to 11~~ claim 4,

wherein the first substrate is a semiconductor substrate and/or
wherein the glass-type material is a borosilicate glass.

13. (Original) A method according to claim 12, wherein the semiconductor substrate
is a silicon substrate and/or wherein the borosilicate glass is Pyrex® glass or
Borofloat glass®.

14. (Currently Amended) A method according to ~~one of the claims 1 to 11~~ claim 4,
wherein the first substrate is a semiconductor substrate and/or
wherein the glass-type material is a polymer-based plastic material.

15. (Currently Amended) A method according to ~~one of the claims 1 to 14~~ claim 4,
wherein joining of the first substrate with the second substrate composed of a glass-
type material occurs by ~~means of~~ anodic bonding or by ~~means of~~ a gluing method.

16. (Currently Amended) A method according to ~~one of the claims 1 to 15~~ claim 4,
wherein the tempering process is conducted by ~~means of~~ controlling the temperature
and the duration to obtain a certain curvature of the forming microlens surface.

17. (Currently Amended) A method according to ~~one of the claims 1 to 16~~ claim 7,
wherein after the tempering process or after the etching away of the first substrate, a
surface of the glass substrate is planed by means of grinding and/or polishing.

18. (Currently Amended) A method according to ~~one of the claims 1 to 17~~ claim 4,

wherein before the tempering process, a third substrate is placed on the side of the second substrate facing away from said first substrate, and wherein the third substrate is provided with at least one impression or at least one opening having a delimiting contour, which delimits the peripheral contour of the forming microlens.

19. (Currently Amended) A method according to claim 18, wherein the third substrate is a semiconductor substrate, preferably in the form of a silicon substrate.

20. (Currently Amended) A method according to claim 18 or 19, wherein after the tempering process, the third substrate is removed by means of an etching process.

21. (Currently Amended) A method according to claim 20, wherein between the third and the second substrate ~~measures according to one of the claims 7 to 11 are carried out separation of the second substrate from the first substrate occurs by etching away the first substrate..~~

22. (Currently Amended) ~~Use of A method for providing a replication mold using the microlenses or the array of microlenses produced producible according to the method according to one of the claims 1 to 21 as original molds or master molds for producing replication molds of claim 1.~~

23. (Currently Amended) ~~Use A method according to claim 22,~~

wherein the microlenses or the array of microlenses composed of the glass-type material is/are used to mold the microlens surface in a substrate, preferably in a polymer substrate.

24. (New) A method according to claim 1,
wherein a metal layer is placed between the first and the second substrate.

25. (New) A method according to claim 1,
wherein the structured surface of the first substrate is provided with impressions having structure widths B and the second substrate having a thickness D and
wherein the following applies approximately:

$$B < 0.5*D$$

26. (New) A method according to claim 1,
wherein the first substrate is a semiconductor substrate and/or
wherein the glass-type material is a borosilicate glass.

27. (New) A method according to claim 1,
wherein the first substrate is a semiconductor substrate and/or
wherein the glass-type material is a polymer-based plastic material.

28. (New) A method according to claim 1,

wherein joining of the first substrate with the second substrate composed of a glass-type material occurs by anodic bonding or by a gluing method.

29. (New) A method according to claim 1,

wherein the tempering is conducted by controlling the temperature and the duration to obtain a certain curvature of the forming microlens surface.

30. (New) A method according to claim 1,

wherein before the tempering, a third substrate is placed on the side of the second substrate facing away from said first substrate, and

wherein the third substrate is provided with at least one impression or at least one opening having a delimiting contour, which delimits the peripheral contour of the forming microlens.

31. (New) A method for providing a replication mold using the microlenses or the array of microlenses produced according to the method of claim 4

32. (New) Method according to claim 31, wherein the microlenses or the array of microlenses composed of the glass-type material is/are used to mold the microlens surface in a substrate, preferably in a polymer substrate.